

KING COUNTY ROAD STANDARDS 1993

CHAPTER 8. UTILITIES

8.01 Franchising Policy and Permit Procedure

- A. Utilities to be located within existing and proposed County road right-of-way shall be constructed in accordance with current franchise and/or permit procedure and in compliance with these Standards. In their use of the right-of-way, utilities will be given consideration in concert with the traffic carrying requirements of the road which are, namely, to provide safe, efficient and convenient passage for motor vehicles, pedestrians, and other transportation uses. Aesthetics shall be a consideration. As a matter of policy, undergrounding of electric utilities will be strongly encouraged, particularly in urban development. Also, utilities are subject to County policies relating to drainage, erosion/sedimentation control and sensitive areas as set forth in KCC 9.04 and 21.54 and the Surface Water Design Manual.
- B. All permits for new placement and replacement of existing utility poles and other utility structures above grade shall be accompanied by written certification from a professional engineer or from an agent authorized by the utility to certify that the installations conform to these Standards and that the proposed work is in conformity with sound engineering principles relating to highway safety.
- C. Requests for exceptions to these Standards will be processed in accordance with variance procedure as referenced in Section 1.08.

8.02 Standard Utility Locations Within the Right-of-Way

Utilities within the right-of-way on new roads or on roads where existing topography, utilities or storm drains are not in conflict, shall be located as shown in typical sections, Drawings No. 1-001 through 1-006, and as indicated below. Where existing utilities or storm drains are in place, new utilities shall conform to these Standards as nearly as practicable and yet be compatible with the existing installations. Above ground utilities located within intersections shall be placed so as to avoid conflict with placement of curb ramps.

- A. Gas and Water Lines:
 - 1. Shoulder-and-Ditch Section:
If practical: Outside of ditch line.
Otherwise: In shoulder three feet from edge of traveled lane.

2. Curb and Gutter Section:
Preferable: One and one-half feet back of curb, or at distance which will clear root masses of street trees if these are present or anticipated.
Otherwise: In the street as close to the curb as practical without encroaching on the storm drainage system. Mains and service connections to all lots shall be completed prior to placing of surface materials.
3. Designated Side of Centerline:
GAS: South and West. WATER: North and East.
4. Depth: 36 inches minimum cover from finished grade, ditch bottom or natural ground.

B. Individual water service lines shall:

1. Be placed with minimum 36-inch cover from finished grade, ditch bottom or natural ground.
2. Use road right-of-way only as necessary to make side connections.
3. For any one connection, not extend more than 60 feet along or through the right-of-way, or the minimum width of the existing right-of-way.
4. Water meter boxes, when placed or re-placed, shall be located on the right-of-way line immediately adjacent to the property being served, unless otherwise approved by the Engineer. Meter box locations within the right-of-way may be approved by the Engineer based on site conditions which make routine service access difficult or impractical.

C. Sanitary Sewers: In the general case, five feet south and west of centerline; depth 36-inch minimum cover from finished grade, ditch bottom or natural ground.

D. In the case of individual sanitary sewer service lines which are force mains the pipe shall:

1. Be minimum two inches I.D., or as required by the utility to maintain internal scouring velocity.
2. If nonmetallic, contain wire or other acceptable proximity detection features; or be placed in a cast iron or other acceptable metal casing.

3. Be placed with minimum three-foot cover from finished grade, ditch bottom or natural ground, within 10 degrees of perpendicular to road centerline, and extend to right-of-way line.
 4. Be jacked or bored under road unless otherwise approved by the Engineer.
- E. Sanitary and water lines shall be separated in accordance with good engineering practice such as the Criteria for Sewage Work Design, Washington Department of Ecology, latest edition.
- F. Gravity systems, whether sanitary or storm drainage, shall have precedence over other systems in planning and installation except where a non-gravity system has already been installed under previous approved permit and subject to applicable provisions of such permits or franchises.
- G. Electric utilities, power, telephone, cable TV: Preferable: Underground with 36 inch minimum cover, either side of road, at plan location and depth compatible with other utilities and storm drains. Otherwise: Every new placement and every replacement of existing utility poles and other utility structures above grade shall conform to the following:
1. Utility poles or other obstacles may be placed within the right-of-way and shall be as far back from the traveled way or auxiliary lane as practicable.
 - a. On shoulder type roads, poles or obstacles shall be located back of ditches and in accordance with criteria in Drawing No. 5-001 unless protected by concrete barrier, suitable impact attenuating device or placed more than three and one-half feet behind face of guardrail, as allowed by an approved variance.
 - b. On vertical curb type roads with a speed limit less than 40 miles per hour, poles or obstacles shall be placed clear of sidewalks and at least eight and one-half feet from face of curb in business areas and five and one-half feet from curb face in residential areas. On urban roads with a speed limit of 40 miles per hour or greater, poles and obstacles shall be placed in accordance with Drawing No. 5-001.
 - c. Notwithstanding the other provisions regarding pole locations described in these standards, no pole shall be located so that it poses a hazard to the general public. Utilities shall place and replace poles with primary consideration given to public safety.
 2. The above constraints on pole and obstacle location will not apply to locations not accessible by moving vehicles, "breakaway" structures whose break-off resistance does not exceed that of 4" x 4" wood post or a 1-1/2-inch standard (hollow) iron pipe or to "breakaway" fire hydrants installed to manufacturer's specifications.

3. Deviations from these pole and obstacle clearance criteria may be allowed by an approved variance when justified by suitable engineering study considering traffic safety. Only the Utility may request a variance from pole and obstacle clearance criteria. Up to three contiguous damaged or weakened poles may be replaced at existing locations under permit in accordance with emergency procedures, however, sequential permits resulting in continuous replacement of a pole line shall not be allowed. A pole or other obstacle which incurs repeated damage from errant vehicles shall be relocated or protected.
4. Locations of poles shall also be compatible with driveways, intersections, and other road features (i.e., they shall not interfere with sight distances, road signing, traffic signals, culverts, etc.). To the extent possible, utilities shall share facilities so that a minimum number of poles is needed.
5. Where road uses leave insufficient overhang, anchor, and tree-trimming space for overhead utilities, consideration will be given to variance from the Standards or to acquisition of additional easements and/or right-of-way for this purpose. Costs incurred for said acquisition shall be borne by the developer, builder, or other party initiating the road construction. However, the associated cost of relocating the utility shall not be borne by King County.

H. Notwithstanding other provisions, underground systems shall be located at least five feet away from road centerline and where they will not otherwise disturb existing survey monumentation.

8.03 Underground Utility Installation

- A. General: The WSDOT/APWA Standard Specifications, particularly Section 7-17.3(3) will generally apply unless otherwise stated below.
- B. Utility Cuts On Existing Traveled Roads
 1. In trenching through existing pavement, the open cut shall be a neat-line cut made by either saw cutting or jackhammering a continuous line. Trench sides shall be kept as nearly vertical as possible. Compaction and restoration must be done as detailed below and immediately after the trench is backfilled, so as to cause least disruption to traffic. Cement concrete pavement shall be cut one foot outside the edge of the trench on each side.
 2. In cuts parallel to road alignment:

- a. All trench backfill under roadway shall be mechanically compacted to 95 percent of maximum density except for trenches over eight feet in depth. Throughout the length of any pipe run, manhole to manhole, in which any part is over eight feet deep, backfill at depths over four feet shall be compacted to 90 percent maximum density by either water settling (see Subsection 8.03C below) or mechanical compaction. The top four feet of the trench line shall then be mechanically compacted to 95 percent. All densities shall be determined by testing specified in Section 2-03.3(14)D of WSDOT/APWA Standard Specifications.
 - b. In any trench in which 95 percent density cannot be achieved with existing backfill, the top four feet shall be replaced with gravel base as specified in the WSDOT/APWA Standard Specifications, Section 9-03.10. This new material shall then be mechanically compacted to 95 percent.
 - c. Restoration of a trench within an asphalt pavement shall include a minimum of six and one-half inches of crushed surfacing material and asphalt concrete Class B the same thickness as the existing asphalt pavement or a minimum of two inches, whichever is the greater. Pavement shall then be overlaid full width with a minimum of one inch compacted asphalt concrete Class B. Any exceptions to this overlay requirement will be on a case-by-case basis, subject to approval by the Engineer, considering the existing conditions of the pavement. Concrete pavement shall be restored consistent with Section 6-02 of the WSDOT/APWA Standard Specifications. Any concrete pavement traffic lane affected by the trenching shall have all affected panels replaced.
3. In cuts transverse to road alignment:
- a. In general, utility trenching through existing pavement across the road alignment will be discouraged. It will not be permitted unless it can be shown that alternatives such as boring or jacking are not possible due to conflicts or soil conditions, or unless the utility can be installed just prior to reconstruction or overlay of the road.
 - b. Without exception, the entire trench shall be backfilled with crushed surfacing top course meeting the requirements of Section 9-03.9(3) of the WSDOT/APWA Standard Specifications. Backfill shall be placed and compacted mechanically in six inch lifts with a County inspector present. If the capability can be demonstrated, based on compaction equipment or quality of backfill to achieve 95 percent density in thicker lifts, the depth of backfill lifts may be increased up to one foot. After backfill and compaction, an immediate cold mix patch shall be placed and maintained in a manner acceptable to the Engineer. On asphalt pavement, a permanent hot mix patch the same thickness as the existing asphalt or a minimum of two inches, whichever is

the greater, shall be placed and sealed with a paving grade asphalt within 30 calendar days. Cement concrete pavement shall be restored with an eight-sack mix, using either Type II or Type III cement, within 30 calendar days.

- C. On Proposed Roads (e.g., New Subdivisions): Backfill compaction for trenches within the roadway of roads not open to public travel may be achieved throughout the entire depth of the trench, either by mechanical compaction as described in B.2 above, or by the following alternative method, namely, water settling:
1. Prior to electing to use the water settling method of compaction, a review of the site shall be done to determine suitability of the use of the water method and a compaction plan submitted by a professional engineer. Compaction plan is subject to approval by the Land Use Inspection Section.
 2. Where water settling of trenches is done, the jetting method shall be used. In trenches over eight feet deep the Engineer may direct the backfill to be placed in two or more lifts and each be jetted separately. Jets shall be inserted at not more than four-foot intervals throughout the length of the backfilled area and shall be slowly forced, on the first lift, down to the bottom of the trench and held until the trench backfill is completely saturated with water.

Penetration shall be to the crown of the pipe, to native ground on side slopes, and subsequently to each preceding lift. The jetting operations shall be completed as soon as practicable after the pipe laying and as part of the backfilling operations.
 3. After the water-settled trench has set for several days and the backfill is visibly dry, firm, and stabilized, any depression in the trench shall be filled and mounded up over the trench. It shall then be further compacted by the use of acceptable vibratory compaction equipment providing 95 percent of maximum density compaction.
 4. The minimum size of hose and equipment shall be such as to provide not less than 35 pounds per square inch pressure at the discharge. The jet shall be rigid iron pipe with a minimum inside diameter of one inch.
 5. Source of water will depend upon local conditions. Hydrants or surface water sources shall be utilized when such sources of water exist within 700 feet of the operations. Hauled water may be utilized when the water settling operation is more than 700 feet from a hydrant.
- D. Controlled Density Backfill:

As an alternative to mechanical compaction, trench backfill above the bedding and below the base course or ATB may be accomplished by use of controlled density backfill (CDF) in a design mixture approved by the Engineer. On crossings required to be opened to traffic prior to final trench restoration, steel plates may be used as approved by the Engineer.

E. Testing:

1. Consistent with the above and prior to placing any surface materials on the roadway, it shall be the responsibility of the developer to provide density test reports certified by a professional engineer. A minimum of one test shall be taken within every 500 feet of trench length and at depths up to 50 percent of trench depth, or as directed by the Engineer. Compaction of laterals or service line trenches shall be tested where directed by the Engineer. Testing of CDF shall be in accordance with ASTM D4832.
2. Whichever compaction method the installer elects, the backfill below four feet must test to be not less than 90 percent maximum density and the upper four feet of backfill must test not less than 95 percent maximum density. Where this cannot be achieved, all affected backfill in the top four feet shall be removed and replaced by gravel base and mechanically compacted to 95 percent as in B.2 above.

F. Notification and Inspection:

1. Consistent with Section 9.02 of these Standards, any developers, utilities, or others intending to trench in existing or proposed traveled County roads shall notify King County Land Use Inspection or Utility Inspection office not less than one working day prior to doing the work. This notification shall include:
 - a. Location of the work
 - b. Method of compaction to be used
 - c. Day and hour when compaction is to be done
 - d. Day and hour when testing is to be done.Phones are as follows:

King County Land Use Inspection Section	(206) 296-6645 (north) and
	(206) 296-6646 (south)
King County Utility Inspection Section	(206) 296-8122
2. As set forth in Section 9.03 of these Standards, failure to notify may necessitate testing or retesting by King County at the expense of the Developer or Utility. Furthermore, the work may be suspended pending satisfactory test results.

8.04 Final Utility Adjustment (To Finish Grade)

- A. All utility covers which are located on proposed asphalt roadways shall be temporarily placed at subgrade elevation prior to placing crushed surfacing material.
- B. Final adjustment of all covers and access entries shall be made following final paving by:
 1. Saw-cutting or neat-line jackhammering of the pavement around lids and covers. Opening should not be larger than 12 inches beyond the radius of the cover.
 2. Removing base material, surfacing course, and frame; adding raising bricks; replacing frame and cover no higher than finished grade of pavement and no lower than one-half inch below the pavement.
 3. Filling and mechanically compacting around the structure and frame with crushed surfacing material or ATB, or pouring in five inch minimum thickness of cement concrete Class 3000 to within two inches of the top.

4. Filling the remaining two inches with asphalt concrete Class B hot mix, compacted and sealed to provide a dense, uniform surface.
5. Final adjustment of all covers and access entries shall be completed within 30 days of final paving.

8.05 Final Cleanup, Restoration of Surface Drainage and Erosion Control

In addition to restoration of the road as described above, the responsible utility shall care for adjacent areas in compliance with Sections 1-04.11 "Final Cleanup" and 8-01 "Roadside Seeding" in the WSDOT/APWA Standard Specifications. In particular:

- A. Streets and roads shall be cleaned and swept both during and after the installation work.
- B. Disturbed soils shall be final graded, seeded and mulched after installation of utility. In limited areas seeding and mulching by hand, using approved methods, will be acceptable.
- C. Ditch lines with erodible soil and subject to rapid flows may require seeding, jute matting, netting, or rock lining to control erosion.
- D. Any silting of downstream drainage facilities, whether ditches or pipe and catch basins, which results from the utility installation shall be cleaned out and the work site restored to a stable condition as part of site cleanup.